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SOVIET ACTIVITIES IN THE ARCTIC AND ANTARCTIC (1)

[Comment: Soviet Activities in the Arctic and Antarctic is a bimonthly report presenting information extracted from Soviet newspapers and periodicals. This report includes information published up to 19 November 1955.

The report covers all Soviet activities in the Arctic and Antarctic with the exception of commercial shipping, which appears in the FDD Summary series Transportation, Communications, Electric Power, and Construction in the USSR.

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All temperatures in this report are given in degrees centigrade. Numbers in parentheses refer to appended sources.]

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DRIFT STATIONS

Information extracted from the Soviet press concerning operations at the drift stations Severnyy Polyus 4 and 5, and the publicity given Soviet Arctic activities in the USSR, is given below.

Severnyy Polyus-4

In the course of 5 months following the change of staff at Severnyy Polyus-4, the station drifted 1,000 kilometers.(1) By 7 November, the new staff had been at the station for 7 months and had drifted a total distance of 1,400 kilometers and a straight-line distance of 570 kilometers. In the 1 1/2 months preceding this, the floe was drifting to the north with unusually high speed, but as it approached the 86th parallel drift speed began to diminish.

Scientific work is continuing at the station in spite of low temperatures, winds, and purgas. Polar Aviators Mazuruk, Zadkov, Osipov, and Vasil'yev have flown in fuel and other supplies to the landing strip built by the station personnel several kilometers from the camp.

New huts have been erected at the station and are now occupied by the workers who had been living in tents. Two electric power stations have been assembled and are now operating.(2)

In the first year of operation at Severnyy Polyus-4, the radio operator, I. Zavedeyev, found time to maintain radio contact with radio amateurs in the USSR. An amateur in Barnaul was the first contacted by the station in 1954.

On some days, hours went by with excellent communications maintained in the western sector--power was sufficient and there was almost no fading. The signals from the station were usually hindered by a great deal of interference, especially for amateurs in large cities, and on some days signals were completely blacked out.

The band usually employed by the station for contacting amateurs was the 40-meter band. This frequency was the most reliable for making contact -- more so than the 20-meter band.(3)

Severnyy Polyus-5

By the first part of July, Severnyy Polyus-5 was across the 84th parallel and drifting to the northeast. By this time, the station's floe had been reduced to one fortieth of its original size and measured just a little over 1/4 square kilometer.(4)

By 7 November, temperatures at Severnyy Polyus-5 were down to around 25 degrees below zero. In the 2 previous months, the station's drift had undergone several abrupt changes in direction. After crossing the range imeni Lomonosov, drift changed from northerly to westerly, and in November it changed to northwesterly. The floe had drifted more than 1,400 kilometers by 7 November and had turned 35 degrees in a counterclockwise direction. Ocean depths had increased to 4,500 meters.

The station personnel are now living in new huts which are warmed by coal stoves. A special engine cooling system has been developed which fulfills the camp's requirements for hot water and drinking water and which assures operation of the sounding winch, the self-recording current indicators, and other equipment. The camp is lighted by power from an engine-driven power plant.(2)

Scientific work is continuing at the station. On 12 June, Severnyy Polyus-5 crossed a previously unknown submarine mountain range at 84 N and 152 E. This is of special interest since M. Ye. Ostrekin found a 500-kilometer-long submarine range north of the Laptev Sea in 1954 which rose 1,000 meters from the ocean floor.

Analysis of material gathered from the range imeni Lomonosov by Severnyy Polyus-5 indicated thatthis range was formed over a period of many millions of years.(5)

A Soviet aerial first was recorded during the establishment of Severnyy Polyus-5 when the aircraft SSSR-N-480 commanded by Ya. Ilyushkin and navigated by S. Makarov flew an assembled tractor to the drifting station.(6)

[Comment: Tractors were flown to the earlier drift stations in sections for assembly on the ice.]

Aircraft of Polar Aviation were making numerous flights to the drift stations in September to deliver cargo left at Arctic shore points by ships during the summer.

The SSSR-N-504 completed a supply flight to both stations in September.(7)

Publicity in USSR

The activities of the Soviet expedition in the Central Arctic are receiving additional publicity in the USSR through the appearance of two new documentaries. The Central Studio for Documentary Films has produced a motion picture entitled "V Tsentre Arktiki" (In the Central Arctic) (8), and the Pravda Publishing House has published an album of photographs entitled V Tsentre Arktiki with photographs by Ryumkin and the text by Morozov.(9)

Home support for the expeditionary group has appeared in the formation of the Young Polar Worker and Seamen Club. The club was founded in February 1955 in the Pervomayskiy Rayon children's park in Moscow. A small meteorology station has been set up in the park and the club members are studying meteorology, aerology, oceanography, etc. On 19 October, the club was visited by V. G. Bakayev, V. F. Burkhanov, M. M. Somov, and D. I. Shcherbakov.(10)

FLIGHTS THROUGH ARCTIC AREAS

The accounts of two Soviet correspondents concerning their extensive flights through the Arctic areas of the USSR and the Central Polar Basin have been published in the Soviet press. Excerpts from these accounts are given below.

Flight of Tass Correspondent

The report made by A. Denisovich, special Tass correspondent, on the trip he made in company with V. F. Burkhanov and other officials of the 1955 expedition, follows:

Departure

"Our flight, Moscow-North Pole, was called at Moscow's Vnukovo Airport much like any other flight departing the same day. Our small party, consisting of the chief of the 1955 expedition, V. F. Burkhanov, several of his staff members, myself, and the TASS photographer V. V. Yegorov, boarded an IL aircraft piloted by Il'ya Pavlovich Mazuruk. Our course was to Ostrov Dikson, then

further east to Tiksi, and from there into the Central Polar Basin to the two drifting stations. A few days earlier, the relief staff of Severnyy Polyus-4 had been flown to Tiksi, and the staff for Severnyy Polyus-5 was leaving Leningrad at almost the same time we were leaving Moscow.

"After a 4-hour flight from Moscow, we arrived in Arkhangel'sk, the gateway to the Arctic. From Arkhangel'sk, we set our course for Amderma and for several hours flew over the Kara Sea, one of the seas crossed by the Northern Sea Route."

Northern Sea Route

"The Northern Sea Route has become increasingly important in the national economy, not only for the delivery of cargo to Arctic areas, but also as a route between the Atlantic and Pacific basins. The shipment of manufactured goods from Leningrad to Bukhta Provideniya by the Northern Sea Route can be made at one third the railroad shipment cost. This has intensified efforts to utilize the route for 6-7 months out of the year, a goal that can be reached only after more thorough studies of the weather in the Central Arctic, of ice formation and movement, and of winds and currents.

"In pursuance of these aims, new polar stations have been established and many of those already existing have been converted to marine observatories affiliated with the Arctic Scientific Research Institute. More and more work is being done at these stations and observatories by highly qualified people who have been prepared in Moscow, Leningrad, and other educational institutions with specialties in Arctic work. For studies on the Central Polar Basin, these stations and observatories have been supplemented by the drift stations.

"We arrived at Dikson in the middle of the night and set our course for Mys Chelyuskin. En route, the aircraft crew carried out ice reconnaissance, and the navigator, P. M. Banyushevich, marked coverage and ice types on a map.

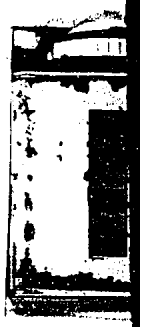
"The airport hotel at Tiksi was overflowing with personnel of Severnyy Polyus-4 and Severnyy Poly-5 who were there awaiting transport to the ice. Aircraft were arriving around the clock from the east, west, and north at the Tiksi airport.

"All equipment and supplies for the two drifting stations were in Tiksi and ready for further transport to the ice."

Reconnaissance Flight

"When the weather improved, we went to the airport to begin our flight to Severnyy Polyus-4 which was located at 80-28 N and 184-06 E, 1,200 kilometers from the mainland. On our flight, however, we would make a "small" detour of about 600 kilometers to reconnoiter the area in which Severnyy Polyus-5 would be established.

"Three hours after take-off, we reached Ostrov Bennet. To the north, at a distance of 200 kilometers, lies Ostrov Genrietta, where three men -- Stepan Alekseyevich Oleynik, polar station chief, Lev Aleksandrovich Savel'yev, radio operator, and Ivan Aleksandrovich Istomin, meteorologist -- have spent more than a year. Radio has been their only connection with the mainland.(11) We flew over the island and could see below the huts of the station and a man waving his arms to us.



"We proceeded to the 150th meridian at low altitude, studying the area where Severnyy Polyus-5 would be established. There was little old pack ice to be seen, but the station would have to be set up in this sector of the Laptev Sea in any case, since study of this area is of great importance."

Severnyy Polyus-4

"Three days after leaving Moscow we reached Severnyy Polyus-4. Mazuruk landed his aircraft on a large ice field lying some 40 kilometers to the southwest of the camp. An LI-2 aircraft piloted by Vitaliy Ivanovich Maslennikov was already on the ice there, and he flew us to the station.

"We spent the first day of our arrival inspecting the camp with great interest, and on the next day the chief of the new staff, P. A. Gordiyenko, arrived. The transfer of supplies and equipment from Tiksi began. The new personnel began immediately to review and study their various duties with the men who had performed these duties for the previous year and were now preparing to return home."(12)

"Gordiyenko and Tolstikov, the previous chief of Severnyy Polyus-4, spent a great deal of time together reviewing the task of the station and jointly inspecting the camp. Both of these men were devoting their lives to the study of the Arctic, and Gordiyenko -- a former lathe operator at the Gor'kiy Automobile Plant -- has prepared for this life from the very beginning. He has been aware since his early training that a theoretical knowledge is not enough on any question.

"Gordiyenko was one of the first Soviet alpinists to scale El'brus in winter, and he has taken part in many Arctic expeditions. He is widely known as a pioneer in the wide use of aircraft for ice reconnaissance, and he has devoted more than 13 scientific works to ice reconnaissance and ice forecasting. He has flown almost 1 1/2 million kilometers over the Arctic Ocean. On one aerial expedition, Gordiyenko was awarded the Order of Lenin, and for work on escorting of ships in ice during the World War II he received the Order of the Red Banner.

"Tolsitkov and Gordiyenko are well acquainted, having wintered together at Mys Shmidta 10 years ago and having taken part together in many polar expeditions.

"When 8 April arrived, a year of operation was marked by Severnyy Polyus-4. This was a day of celebration, speeches, and farewells, as the log books for the station were turned over to the new chief, Gordiyenko."

Severnyy Polyus-5

"We have been in Tiksi for several days. With the staff of the new station Severnyy Polyus-5 we are waiting for transportation out on the ice. The weather has been extremely poor, and the days of waiting are going by slowly. The cargo to be moved north and all equipment for the station have been checked a dozen times and found ready for shipment.

"The original staff of Severnyy Polyus-4 is continuing to arrive in Tiksi and they are met with warmth and curiosity by the men waiting to go out on the ice to establish Severnyy Polyus-5.

"On one evening while waiting in Tiksi, we were entertained by a group of Soviet artists making a tour of the Arctic area and Severnyy Polyus-4.

"After several days, a short period of quiet weather arrived during which Mazuruk and Volkov, chief of the new station, escaped from Tiksi. On the next day, it became known that the flagship had landed on an ice floe, and V. I. Maslennikov, who had his LI-2 on the ice some 70 kilometers away, proceeded to the location held by the flagship. This ice floe on which the planes were located was suitable in strength but it was small, and there was no flat ice nearby for landing aircraft. Accordingly, Volkov took off with Maslennikov to study the area between 82 N and 83 N and 152 E and 160 E. Finally, at 82-04 N and 156-52 E a suitable floe was found. It was oval in form and measured 2 1/2 by 2 kilometers. On the south of this floe there was a chain of frozen separations, one of which was utilized for a landing area. Something better would have to be used for a transshipping base, however, and such a place was found in the middle of an old ice floe five kilometers to the south.

"On 19 April, the aerial division commanded by M. A. Titlov began flying the men and equipment for Severnyy Polyus-5 to this transshipment base.

"I flew to the new station with the camp cook, V. I. Zagorskiy, and S. A. Shaposhnikov, designer of Arctic tents and huts.(13)

"We flew for 5 1/2 hours over the ice of the central polar Basin before sighting our goal. We could see two dark, circular tents and an LI-2 aircraft on the ice -- this was the plane flown in by V. I. Maslennikov. We were met on landing by Volkov, Cameraman A. G. Semin, and Meteorologist G. I. Kizino who had flown in several hours earlier. The plane was quickly unloaded and left on the return trip. Our first task was to set up the dining tent, and this was soon accomplished and the first meal cooked at the station.

"No one slept with the arrival of night, for it remained light at the station and more aircraft were arriving. Equipment and portable houses were arriving from the west, from the station Severnyy Polyus-3 which had terminated operations. One plane was not yet unloaded when another was on the ice. All sorts of equipment and instruments were unloaded as rapidly as possible until the ice was strewn with them.

"A dismantled KD-35 tractor was delivered by three aircraft.

"Scientific work was begun immediately upon arrival of the necessary instruments. The hydrologists cut holes in the ice, set up their winch and took the first sounding -- 2,800 meters.

"Two days later, the helicopter arrived, and on 22 April the first group of workers flew to the base floe and raised the Soviet flag. On this day, the coordinates of the station were 82-11 N and 156-13 E.

"The first tent put up at the base floe was for the radio equipment, and within a matter of hours the Station Severnyy Polyus-5 was transmitting its first reports. Communications were established with Severnyy Polyus-4 and the radio station on Mys Chelyuskin.

"The rest of the camp was completed then with the company room in the center of the area and the other tents and huts located around it.

"The ice floe is drifting to the north and northwest, and it is supposed that the station will continue in this direction and will pass near the North Pole.

"One of the hydrologists at the station is Z. N. Gudkovich, a young scientist who has decided to devote his life to the study of the Arctic. In 1950-51 he took part in the drift of the station Severnyy Polyus-2. Recently he completed his dissertation and received the degree of Candidate of Geographic Science for interesting work on ice drift in the Central Polar Basin."

"On 23 April we continued to organize the camp. All personnel (13 men) were in the camp."(14)

"Throughout the busy camp, Nikolay Aleksandrovich Volkov could be seen hurrying from one place to another. Volkov possesses great experience in Arctic matters, having studied this area for almost 25 years. When still a 5th-year student at the Leningrad State University, he accepted the position of hydrologist at the polar station in Uelen. Since then he has taken part in many expeditions, including almost all those to the high latitudes.

"The construction of the various living and work areas was soon completed and the full scientific program begun.

"It was not long before we received our first shock at the camp. A crack opened at the very edge of our station. With a width of 2-3 meters, it stretched north and south several kilometers. In another day, however, the crack has frozen over and no damage was done .

"The station launched its first radiosonde with good results. Didenko watched its flight with theolodite for more than 1 1/2 hours, while another staff member received the radio signals. This radiosonde reached an altitude of 22,000 meters. On this day, 8 May, the minimum temperature was recorded at 9,320 meters and was 55.2 degrees below zero. On the ice at this time the temperature was 16 degrees below zero.

"The work of the station was in full swing."(15)

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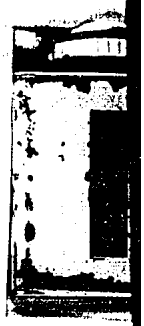


Flight of "Ogonek" Correspondent

The account of Tikhon Semushkin, correspondent for the Moscow weekly Ogonek, concerning his flight through the Arctic, follows:

Moscow-Amderma

"Viktor Fedorovich Barkhayanov of the Ministry of Maritime Fleet and I made the Moscow-North Pole flight in an IL-12 aircraft piloted by Innokentiy Grigor'yevich Bakhmutov. Before take-off, the mechanic reported to the plane commander that the aircraft was ready for flight with a total weight of 17 tons.

"While under way northward, Barkhayanov discussed the navigation season on the Northern Sea Route. He told me that ice conditions were unusually severe along all parts of the route. Ships moving from east to west or west to east were beset in the ice or had been waiting at the edge of the ice for about a month. Even icebreakers were stopped. In the east, at Serdtse-Kamen', three line icebreakers and a group of transport ships under escort have been caught by the Ostrov Vrangelya ice mass. On all routes, from Murmansk to Bukhta Provideniya, ships were standing, unable to operate normally.

"Ordinarily, ships complete half the crossing of the Northern Sea Route in the beginning of July, reaching Tiksi from both east and west. This year, ships were still standing at the approaches to the Arctic at the end of July and only one ship, the Lena, under the command of Captain Vetrov, completed the trip from west to east.

"Barkhayanov was uneasy about the state of navigation and decided to leave his Moscow office to fly along the Arctic route where the Arctic regional administrations are located. These administrations are headed by experienced maritime workers and include staffs of icebreaker captains stationed along the Northern Sea Route, fliers for ice reconnaissance, observatory chiefs and hydrologists, synopticists, and all polar stations within the radius of their authority. There are two such administrations on the Northern Sea Route, one in the east and another in the west.

"Barkhayanov pointed out that although icebreakers are an important aid in navigation on the Northern Sea Route, they are only auxiliary in the sense that they cannot maintain navigation alone. The key to navigation in the Arctic areas is forecasting, contributed to by the observatories of the Arctic Institute, the polar stations, and the drifting ice stations."

"After a flight of 8 hours, our aircraft arrived in Amderma. The passengers were carried into the workers settlement by auto. At one time there was a mine in Amderma but it has been closed because it was not economical to operate.

"The rayon center is in Amderma and the directors of the rayon live in the hope of developing a coal industry there to supply fuel to Leningradskaya, Murmanskaya, Arkhangel'skaya, and Vologodskaya oblasts."

Dikson

"After a 6-hour stop in Amderma, we took off for Ostrov Dikson where the seaport is located. On arrival there, however, our flight was informed that Dikson was closed by fog, so we were referred to Ust'-Tareya." [Note: The Soviet Atlas Mira shows Tareya lying about 280 kilometers approximately ESE of Dikson.]

"At each stop made during the flight, Barkhayanov was well acquainted with the polar workers, and indeed he is acquainted with each worker in the Arctic by face, by first name, and by patronymic."

"With the clearing of the weather, we continued on to Dikson. Dikson is the center of the western sector of the Arctic. The regional administration of the Murmansk Steamship Company is located there in addition to the maritime port, a radio-meteorological center, and an observatory. There are more than 100 two-story houses in Dikson.

"In Dikson, the passengers of the flight were carried to the hotel by automobile. There we met many acquaintances including the veteran polar worker Khvorostanov. This man has spent more than 20 years in the Arctic, and in another 5 years he plans to retire to some southern clime on a pension.

Tiksi

"Taking off from Dikson, we set our course for Tiksi located in the delta of the Lena -- a delta 83 miles wide. On the flight to Tiksi, the plane flew over the Sangarskiy Coal Basin which supplies fuel to ships on the Northern Sea Route, and on reaching the Lena River we could see the SS Issyk-Kul' below on one of her regular voyages to Tiksi.

"A timber exchange is located in Tiksi, supplied with timber from east and west. The bay is clogged with floating timber made up into rafts of thousands and even tens of thousands of cubic meters each. Tiksi is the most active port in the western Arctic.

"There are three [sic] areas in Tiksi: the radio-meteorological center, the seaport, the airport, and the observatory. The passengers from the aircraft were quartered in the airport hotel, a well-built four-story structure set on permafrost.

"Barkhayanov and I went by automobile to the seaport for an inspection of that installation. The roads to the port were built with great difficulty, crushed rock, gravel, and fine stone sinking into the active layer of the permafrost as into a marsh. Eventually, however the road builders were successful and automobiles can now operate in areas which were formerly accessible only by caterpillar tractors.

"We stopped at the side of an open pit where excavators were tearing up the permafrost and dumping the rock it contained into dump trucks. These trucks moved one after the other to the road site where they deposited their loads.

"The office of the port is a large, comfortable room with a view on the bay and on the streets of Tiksi. There were some 20 men in the office including port workers, workers from the observatory, and captains from ships waiting in the port. Barkhayanov was interested above all else in the synoptic situation in the Arctic, so he was briefed on cyclonic activity and other matters by a member of the observatory staff. On the basis of this briefing, he decided to change his itinerary so as to complete ice survey first and then proceed on to the east to the drift stations.

"The chief of the port reported on the movement of ships and preparations for navigation. It was very difficult to work vessels on schedule in the port, because 700 stevedores were required, whereas only 400 were available. Loading of timber also requires more people."

Reconnaissance Flight

"After this survey of the port at Tiksi, we again took off, this time with a hydrologist aboard, to make an ice reconnaissance flight. During this flight, the plane passed over the diesel-electric ship Lena proceeding through the ice at a speed of 8 knots. The hydrologist aboard the aircraft radioed a suggested course to the ship, and after circling over the ship we set our course for Tiksi.

"Word was received however that Tiksi was closed in and we set our course to Kosistyy. In less than an hour Kosistyy was also closed in by fog and we were diverted to Ust'-Yansk. A landing was eventually effected at Ust'-Yansk although that point at first refused permission to land because of the poor visibility. After some discussion, however, we landed with a ceiling of almost zero. We were on the ground after 11 hours of uninterrupted flight. We were met at the airport by a man who explained that our landing was denied at first because the weather was clear in Chokurdakh and we could have landed there.

"After landing, we slept for several hours and then went to the hotel restaurant. We heard there that some fish has been flown in from Indigirka by seaplane, the pilot of which was looking for passengers and cargo to fly out of Ust'-Yansk. He was complaining that he could not compete with the Civil Air Fleet because their tariffs are half the Polar Aviation tariffs, and as a result passengers do not choose to fly with Polar Aviation.

"We took off early in the morning and began flying toward the Indigirka River. There was no sign of life until we came almost to the river where we passed over Chokurdakh, a large settlement of Glavsevmorput', lying on the banks of the Indigirka.

"From there we continued on to the Kolyma River. There is seldom fog on the Kolyma and this area records a maximum number of sunny days. Airmen naturally have great affection for the Kolyma."(25)

"On reaching the Kolyma we circled over a settlement where in 1934 there was only one house. It is now a polar town. It is located on the Kolyma where, together with its tributary, this river makes the Volga look like a small stream in comparison. The landing strip flashed below our plane and in a moment we were on the ground.

"We observed that the inhabitants of the town bathed in the waters of the river and we soon joined them. While the water could not be called warm, it was nevertheless refreshing.

"When we finished, we boarded a bus for the hotel and were soon seated in the restaurant before a meal.

"Shortly thereafter, the engineer from the LERM (summer operational-repair shops) came in to inform us that our plane would be held up for a time check, or as auto mechanics would say, 'preventative maintenance' Barkhayanov objected at first to losing the time, but after being reminded that 'It is better to lose a day than open an unofficial Severnyy Polyus-6', he agreed to waiting one day for this work.

"After eating, we walked down to the river bank where Barkhayanov stopped to converse with the pilot of a 'Catalina', which was moored there. I caught a ride with a passing vehicle to the town where I saw the government buildings, the secondary school, the hospital, and the stores -- all built by Glavsevmorput'. An electric power station is now under construction.

"When the check of our aircraft was completed, we were again airborne. We flew over the small Shalaurov Ostrov where Barkhayanov pointed out the single house which houses three men now in their second year there."

Severnyy Polyus-4

"After passing over the island, we settled down to the long flight over the endless tracks of ice as we set our course to the north for the drift station Severnyy Polyus-4. Three hours went by, then four, then five. We were 1,600 kilometers from the shore when we established radio contact with the station Severnyy Polyus-4. Among the members of our crew there was some uneasiness about making the landing and Gordiyenko did not give permission to land the IL-12 very willingly.

"We were flying through thick weather, but the radio operator at the station (over which we were circling by this time) reported that visibility on the ice was excellent. I remembered having heard Bakhmutov say earlier that an aircraft such as ours usually required not less than 1,000 meters in which to land. On the ice floe, surrounded as it was by open water areas, we would have 600 meters.

"Barkhayanov came out of the pilot's cabin at this point, having informed the plane commander that the decision was his as to the feasibility of landing, and that in any case he (Barkhayanov) would not insist on landing but was willing to return to the mainland. After a few minutes, the co-pilot turned to Barkhayanov and stated that the pilot had decided to land.

"Our aircraft dropped down until we could see the huts of the camp, and the navigator ordered us to move back into the tail of the plane. In a few minutes the plane was on the ice and stopped. Bakhmutov came back from the pilot's compartment and stated that the landing had been completed in 380 meters. No comment was made, for such a landing was technically impossible.

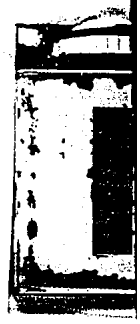
"The chief of the station, Gordiyenko, was soon in the plane to welcome us and lead us outside to a waiting helicopter. Fifteen of us got into the helicopter -- a helicopter which had flown from Moscow to the station, including a 2,500-kilometer low-level flight over the ice of the Arctic Ocean.

"The helicopter carried us to the center of the drifting camp. There was a great deal of water around the camp area and a system of planks had been set up for use as sidewalks above the water level [Photo No 152825 and 182961].

"We entered the company room where we found two long tables along the wall. These tables, and indeed all the furniture, were of special design and made of aluminum.

"We sat down in the company room for dinner, during the course of which a number of toasts were made. At the completion of the meal, the other members of the station left for their various work areas, while I remained alone with Gordiyenko. We had barely begun talking, however, when a guest arrived -- Volkov, the chief of Severnyy Polyus-5.

"Nikolay Aleksandrovich Volkov is a man with whom I am very well acquainted since the two of us had landed together at Mys Dezhneva 20 years ago and wintered at Uelen.



"The bases maintained by Gordiyenko and Volkov are only a 2-hour flight apart, but they are completely different in character. The ice around Severnyy Polyus-4 is as flat as the steppe, while around Severnyy Polyus-5 the ice is a veritable mountain country, with high hummocks rising all about. The landing area is behind the hummocks to the northeast of Severnyy Polyus-5 and is served by an AN-2 aircraft. Volkov categorically refused to use our IL-12 to land there and came to visit us in his own plane.

"We left the company room to walk through the camp area and soon came upon a small caterpillar tractor working in the station area. This little tractor was of French design, and the members of the station swore that without it they would be lost: 'When the GAZ-69 trucks are skidding, the Frantsuz (as they called it) continues to operate. It has worked every day and worked well. Place a plow on the front, and you have a bulldozer. This is no tractor, it is pure gold.'"

[Illustrations include: Three aerologists at Severnyy Polyus-4 -- Dunayev (Photo No P-56291), Gaygerov (Photo No P-56292), and Dolganov (Photo No P-56293); Ice drill in operation at Severnyy Polyus-4 (Photo No 182964)]. (26)

"We inspected the camp area, including all the scientific work areas, with the two station chiefs.

"We were then returned to the landing strip by the helicopter and prepared to take off, with Volkov and Gordiyenko, who Barkhayanov wished to have along during ice reconnaissance operations.

"The crew of our IL-12 had moved it several times around the landing strip floe because its weight, resting as it did on three wheels, was causing the ice to sag.

"We boarded the aircraft and were soon off the ground in spite of the short 600-meter strip we were forced to use.

"We had a 5-hour flight to shore ahead of us, and for the most part we tried to catch up on our sleep. The aircraft crew kept at their duties however, and the hydrologist maintained a record of ice observations along the route.

"We finally landed at the base of the Administration for Eastern Arctic Maritime Operations and were met at the plane by the chief of eastern maritime operations, Yakovlev.

"We were informed that a convoy of ships with its icebreaker flagship was held up on the Northern Sea Route in this area and unable to proceed. Some of the ships had moored to ice anchors and others were drifting north with the ice. We took off and headed directly to the ships, where we contacted Captain Lyakhov on the icebreaker and began flying extensive ice reconnaissance flights ahead of the convoy in an attempt to find a course the ships could follow through the ice. We covered a significant part of the area in all directions from the convoy, and after consultations among the various personnel aboard the aircraft, the recommended course was transmitted to Lyakhov with instructions from Barkhayanov to make maximum use of leads and polynya and restrain the transport vessels from attempting to force heavy ice at all costs.

"We returned to the mainland and landed. Barkhayanov informed the aircraft crew that the task ahead was now simple -- he need only be in the Collegium of the Ministry of Maritime Fleet by 1700 hours on the next day.

"On my return to Moscow and after reviewing this article, I became curious about the convoy we had started on its way, so I inquired at the Maritime Administration as to their fate. I was informed that all ships had reached their destination, and many of them were on their second voyages in the Arctic."

[Illustrations include: Staff member at Severnyy Polyus-5 sets out by boat to hunt (Photo No 182963); Personnel at Severnyy Polyus-5 dig out after heavy snow (Photo No 182960); N. A. Volkov, chief, Severnyy Polyus-5 (Photo No P-56294).](27)

SOVIET PARTICIPATION IN INTERNATIONAL GEOPHYSICAL YEAR

The Soviet Union plans to be extremely active in the program of the IGY (International Geophysical Year), beginning in 1955 with the departure of the advance expedition to the Antarctic. Following are reports concerning the activities planned:

The Soviet delegation to the Brussels IGY conference has outlined Soviet participation in the program, and in so doing the delegation chief, V. V. Belousov, noted that the USSR will be especially active in the fields of oceanography, geomagnetism, meteorology, glaciology, and ionosphere research. The Soviet Union will maintain 58 aerological stations, 25 magnetic observatories, 12 earth current and magnetic field recording stations, 35 stations for studies on northern lights and other sky illumination, and many other facilities to participate in the IGY program.(16)

Antarctic Expedition

The most highly publicized component of this program is the complex expedition being sent to the Antarctic by the Academy of Sciences USSR, and this subject has been discussed at some length by members of the expedition in addresses to many of the important scientific organizations in the USSR. These addresses, which provide at least a partial picture of the Soviet Antarctic expedition, included the following:

On 18 November, the Presidium of the Academy of Sciences USSR was addressed by V. F. Burkhanov, Deputy Chairman of the Council on Antarctic Research, Academy of Sciences USSR.(17)

On 24 October, M. M. Somov, chief of the expedition, spoke to the scientific council of the Arctic Institute.(18)

On 13 October, the newly formed Council on Antarctic Research, Academy of Sciences USSR, held its first meeting under the chairmanship of D. I. Shcherbakov, and was addressed by M. M. Somov and V. G. Kort, director of the Institute of Oceanography, Academy of Sciences.(19)

A November meeting of the Geographic Society USSR in Leningrad was also addressed by M. M. Somov.(20)

The advance component of the expedition will be delivered to the Antarctic during the summer season there by the diesel-electric ships Ob' and Lena and a refrigerated ship from the fleet of the Ministry of Fishing Industry. The refrigerated ship has been to the Antarctic before on voyages to the whaling flotilla Slava.

The diesel-electric ships will put about 8,000 tons of cargo ashore on the Knox Coast of Antarctica, and over 300 tons of specially packaged produce will be landed for the base camp.(20)

[Note: It was reported in another source (18) that 2,000 tons of fuel would be put ashore, but without indication as to whether this is part of the 8,000 tons or in addition to it.]

Once the cargo is ashore, it will be transported to the camp site by 10 caterpillar tractors with sledges.

As soon as unloading is completed, the Lena will return to the USSR while the Ob' will continue operating in Antarctic waters on an oceanographic voyage. (18)

The main shore base, designated "Mirnyy" after a ship of the 1819-1821 expedition(17), will be located in the western part of the Knox Coast at approximately 67 S and 105 E.(21) The two forward bases, designated "Vostok" and "Sovetskaya," will be established later.(17)

The base camp Mirnyy will contain 18 three-room houses(17) with an area of up to 60 square meters each(18), an electric power station with a capacity of several hundred kilowatts(20), a powerful radio station, a garage, a hangar, warehouses, and scientific laboratories.(17) Communications in the camp will be maintained by an automatic telephone system with 50 numbers.(20)

The expedition at the base camp will be provided with conventional aircraft, helicopters, tractors, cross-country vehicles (specially produced for the expedition by the Gor'kiy Automobile Plant), and eight radio stations for maintaining communications between the various components.(17)

About 70 members of the expedition will winter at Mirnyy, each man supplied with 38 pieces of equipment and clothing.(20)

The aerial component at Mirnyy will be composed of a heavy IL-12, two helicopters, LI-2's, and single-engine reconnaissance aircraft [probably AN-2 aircraft, used in the Arctic].

While the shore base is being established, other aircraft will make regular flights to the Antarctic from Moscow via India, Indonesia, and Australia, or by way of Egypt and Africa.(16)

The air group based at Mirnyy will be commanded by Cherevichnyy with Morozov serving as group navigator, and will include Pilot Sorokin, Flight Engineer A. Mokhov, and others.(21)

The expedition's aircraft will be used for reconnaissance, survey, and scientific observations, making landings on drift ice, mountain plateaus, and snow fields.(21) In addition, the two camps in the interior of the continent will have all personnel and equipment supplied by air.(18)

Flights in the Antarctic region will be very difficult. The continent itself is uncharted at present, and it is impossible to make such flights without charts. For the first flights, therefore, a grid chart has been made up on a stereographic polar projection at a scale of 30 kilometers to one centimeter. The approximate configuration of the Antarctic will be placed on the grids. In the course of the next 2 or 3 years, new areas will be visited and new discoveries made -- these will be inscribed on the basic map. Aerial cameras will be employed to fix precisely all features observed from the aircraft.

Soviet designers and navigators have produced astrocompasses which assure precise, safe navigation in the Arctic. Since the South Pole is the antipode of the North Pole, the compasses will have to have their mechanisms changed from clockwise rotation to counterclockwise rotation.

The Astronomical Institute is preparing new star tables and star charts for the Antarctic area.(22)

Writing on the Antarctic expedition, Professor Spirin stated:

"It is interesting to note that only the American and the Soviet expeditions will use aircraft in the Antarctic. The American planes will operate only in the summer, however, while Soviet planes will fly all year long."(16)

Preparations for dispatching the Antarctic expedition were being completed in September, October, and November in time for the sailing of the Ob' on 30 November and the Lena 2 weeks later.(17)

The city of Riga has contributed a great deal to the expedition's preparation. The shipyard in Riga, of course, is re-equipping the Ob' and outfitting the Lena for the voyage to the Antarctic. In addition, the Riga "Assotsiatsiya" Factory is preparing furniture for the Ob', and the Riga Cartographic Factory is preparing maps for both the seamen and the navigators of Polar Aviation. [Illustration of the Ob' in Riga: Photo No 1829€2].(23)

In Leningrad, the Strel'ninskaya Shipyard completed an order for 20 houses to be used by the expedition. Apparatus for scientific observations was prepared by the Leningrad "Gidrometpribor" Plant, the experimental shops of the Arctic Institute, and the shops of the Main Geophysical Observatory imeni A. I. Voyeykov.(19)

Whaling Flotilla Slava in the Antarctic

The Soviet expedition will be able to make use of the considerable experience gained by the whaling flotilla Slava in nine voyages to the Antarctic. The experience has been summarize in an article by Capt A. Solyanik, commander of the flotilla, which follows:

"Candidate of Geographic Science G. M. Tauber, who has accompanied the Slava to the Antarctic, has produced tables of winds in the "roaring forties" and these have been published by the State Oceanographic Institute."

[Note: The designation "roaring forties" is used in Russian, as in English, for the 40-50 degree south latitude belt of high westerly winds.]

"These tables were made up from observations of the navigators aboard the Slava and aboard the Black Sea tankers that have made the voyage from Odessa to the Antarctic and back. In nine voyages the Slava has made to the Antarctic, the 40-degree latitudes have been crossed only twice in good weather.

"Storms with winds of Force 8 Beaufort and above were encountered on 60 percent of the days crossing these latitudes. Severe storms reaching hurricane intensity were encountered on 4 percent of the total storm days. Sea waves were 7-8 meters in height, and increased to 16-18 meters in height during hurricane weather. On the eighth voyage of the Slava, seas were taken over the lights and main compass, located 22 meters above the ocean's surface.

"Sailing is extremely difficult in Antarctic waters because of the unstable character of the weather. This instability is brought on by the intense cyclonic activity which takes place in the sub-Antarctic low-pressure zone. As a rule, the cyclones move from west to east with a speed of 25-30 miles per hour, but in the winter their speed usually increases to 35-40. The cyclones move in series, one after the other, with only short distances between their centers. Their course lies approximately along the 60th parallel. Their direction changes, however, in relation to distribution and amount of floating ice.

"The sun and stars are visible only for short periods in the Antarctic and navigators must always have their sextants ready at hand when these bodies do appear.

"Fog and haze are a common occurrence in the Antarctic. Very thick and unpredictable fogs are observed in the area of the South Orkney and South Shetland islands. It is not uncommon in this area to find the fog in belts 15-30 miles wide with 10-15 mile intervals where the visibility is good. With southerly winds, visibility is especially good, and the horizon is well defined. Snow squalls are usually of short duration -- 15-20 minutes -- when the wind is from the south.

"Tides in the South Polar area are complex in character. The average height of a flood tide varies from 0.5-4.3 meters. In the majority of Antarctic islands, one flood tide and two ebb tides are observed every 24 hours. On the shore of Graham Land, as a rule, there are two flood and two ebb tides per 24 hours, although at the syzygies there is only one flood per 24 hours.

"At sea, the speed of the flood and ebb currents is insignificant and is not considered by navigators. The speed of currents along island shores ranges from 0.5 to 1.5 miles per hour. In the straits between islands, the current reaches a speed of 5 miles per hour. Along the shores of Antarctica, where the winds are generally easterly, the surface current is westerly. Its speed varies from 1 to 1.5 miles per hour. North of the 60th parallel, where the winds are westerly, the current is easterly with a speed of 1-1.5 miles per hour.

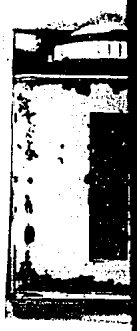
"Two types of ice are encountered in the Antarctic: sea ice and icebergs calved from the glaciers covering the south polar mainland and islands. The ice cover begins to form at the end of March in the Antarctic. Young ice, old ice floes, and tabular bergs make up the pack surrounding the shores of Antarctica.

"Under the influence of southeasterly winds and currents from the continent, the pack moves approximately to the 60th parallel where it rafts and fuses to form a belt of floating ice which in some years reaches to the 52nd parallel. The width of this belt of ice is not uniform throughout the Antarctic but varies from 10-15 to 800 miles. Beginning in the middle of January and continuing through March, the edge of the pack remains only near the continent and in the western part of the area to the south of the South Sandwich Islands. The edge of the pack there remains almost every year from the 60th to the 62nd parallels. In other areas the ice may be encountered only at the 70th parallel.

"During the summer months, the Ross Sea is largely free of ice and this area is rich in blue whales. The entrance to the sea is usually closed by heavy ice fields, however, and this makes entering too difficult to permit the entire whaling flotilla to operate in this rich area. These ice conditions are not uniform, however.

"The ice was especially bad in 19[illegible] when an American expedition under Richard Byrd, equipped with a powerful icebreaker and ice reconnisance aircraft, was able to make no more than 3 miles per 24 hours and this with great difficulty. In the 1955 navigation season, the pack across the entrance to the Ross Sea was 600 miles wide.

"Antarctic icebergs are significantly larger than the ice islands of the Arctic areas. In height the Antarctic bergs range from 20 to 100 meters and in length they reach several kilometers. Three years ago the Slava met an ice island in the Antarctic which was more than 20 kilometers long and 6 kilometers wide. Near the South Sandwich Islands, more than 200 large icebergs could be seen from the bridge of the Slava at one time.



"The northern boundary for icebergs from the mainland of Antarctica and islands is along the 52nd parallel, but bergs are sometimes met in the 40's.

"Icebergs are an important menace to navigation in the Antarctic. A foreign tanker returning from the Antarctic in February collided with a berg 150 miles northeast of the Faulkland Islands and was seriously damaged, being under way at full speed at the time of the collision.

"During periods of poor visibility, the Slava has found it advisable to head into the wind and current at minimum speed to await improvement in visibility.

"The British whale factory ship Balaena was proceeding from the Antarctic at normal speed with visibility of not over 200 meters. Radar was not picking up the tabular bergs and when one was sighted from the bridge action was not taken aboard the ship with sufficient speed. The 30,000-ton ship collided with the berg, and only the presence of numerous bulkheads (since the ship was built like a tanker) prevented her from meeting a fate similar to that of the Titanic." (28)

Arctic Activities for the IGY

Although the Antarctic expedition is receiving the majority of the publicity in connection with the IGY, the USSR also plans a broad program of Arctic and sub-Arctic studies, as indicated in the following report:

Observations will be made for the IGY from over 100 permanent polar stations and from several new ones which are planned. Contributions will also be made by the five Arctic Institute observatories located at Barentsburg (Spitsbergen), Bukhta Tikhaya (Zemlya Frantsa Iosifa), Ostrov Dikson, Bukhta Tiksi, and the port of Pevek.

The Arctic Ocean will be studied by both drifting stations and so-called "mobile groups." Two drift stations, Severnyy Polyus-4 and Severnyy Polyus-5, will continue to operate as now, and a third Severnyy Polyus-6, will be organized.

The mobile groups, traveling by air, plan to make observations at more than 500 points. Planes of the Polar Aviation will also make survey flights along the meridians prescribed by the IGY program for systematic observation. These flights will go as far as the North Geographic Pole. (24)

NEW ARCTIC PORT

A new Soviet commercial port, the city of Nakhodka, has risen where there was nothing a few years ago. A stone breakwater has been built into the sea, the bay has been dredged out, heavy cranes installed, and reinforced-concrete piers constructed.

Vessels with cargo are now dispatched almost daily from Nakhodka to the shores of Chukotka, Sakhalin, Kamchatka, and the Kolyma River.

Broad streets have been laid out in the city and they are now lined with many-storied buildings, including a hospital, school, and nurseries. Clubs and motion-picture theaters have also been built.

More than 200,000 square meters of new living space have already been completed in the city, but construction is continuing. In 1955, one trust alone is to spend 160,000,000 rubles for construction.(29)

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